

REMARKS:

In the foregoing amendments, claim 1 was amended by incorporating the limitations of claim 2 therein. Claim 2 was canceled accordingly. In addition, claim 8 was rewritten as an independent claim, including the limitations of claims 1, 6 and 7; and claim 9 was rewritten as an independent claim including the limitations of claims 1 and 6. The Official action objected to claims 8, 9 and 14 as being depended upon a rejected base claim, but stated these claims would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Since claims 8 and 9 were so rewritten as independent claims, a formal allowance of these claims is respectfully requested.

Claim 10 was amended to define that the controller is electrically coupled to the plurality N of solenoids only with N+1 signal lines for driving the plurality N of solenoids, as described in applicant's specification and discussed in applicant's response filed on December 10, 2003. Claim 12 was amended to depend from claim 11. Accordingly, applicant respectfully requests that the examiner reconsider and withdraw the objection to claim 12 that was set forth in section 1 at the top of page 2 of the Official action.

In summary, claims 1 and 3-14 are pending in the application. Claims 8, 9, and 14 were stated as containing allowable subject matter in the outstanding Office action, and claims 8 and 9 were rewritten as independent

claims in the foregoing amendments. Accordingly, claims 1, 3-7, and 10-13 remain in the application for consideration by the examiner.

Applicant respectfully requests that the foregoing amendments be entered under the provisions of 37 C.F.R. § 1.116(b) for the purposes of placing the application in condition for allowance or for the purposes of appeal. The foregoing amendment to applicant's claim 12 corrects an idiomatic and/or editorial matter in response to the objection to the claims that were set forth in the outstanding Office action. In addition, the foregoing amendments rewrite claims 8 and 9, which were indicated as containing allowable subject matter, as independent claims. The amendment to claim 1 incorporated the limitations of claim 2 therein, and therefore, this amendment raises no new issues requiring further consideration and/or search. Claim 10 was amended to better define applicant's invention as described in applicant's specification and discussed in applicant's response filed on December 10, 2003, and therefore, this amendment raises no new issues requiring further consideration and/or search. It is believed that the foregoing amendments place the application in condition for allowance or in better condition for appeal. Still further, the outstanding Office action applied newly cited teachings against applicant's claims, and therefore, the applicant has not yet had an opportunity to respond and/or amend the claims in response to the newly cited teachings. For all these reasons, applicant respectfully requests that the foregoing amendments

be entered under the provisions of 37 C.F.R. § 1.116(b) for the purposes of placing the application in condition for allowance or for the purposes of appeal.

The Office action set forth five prior art rejections of applicant's claims. Claim 10 was rejected under 35 U.S.C. § 102(b) as being anticipated by Fig. 27 of the present application, which was newly cited against applicant's claims, in view of Niwa. Claims 1, 6, and 7 were rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. patent No. 4,485,424 to Niwa *et al.* (Niwa), which was newly cited against applicant's claims. Claims 2 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Niwa. Claims 3 and 4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Niwa in view of U.S. patent No. 5,941,284 to Suzuki *et al.* (Suzuki), which was newly cited against applicant's claims. Claims 11-13 were rejected under 35 U.S.C. § 103(a) over Fig. 27 of the present application. These rejections span pages 2-5 of the Official action. Applicant respectfully submits that the claims 1, 3-7, and 10-13 are distinguishable from the teachings of Niwa, Suzuki and/or Fig. 27 of the present application at least for the following reasons.

Concerning the rejection of claim 10 under 35 U.S.C. § 102(b), the Official action stated that the claim language is considered open-ended, and thus allows for more than N+1 signal lines. In the foregoing amendments, claim 10 was amended to define that the controller is electrically coupled to the plurality N of solenoids only with N+1 signal lines for driving the plurality N of

solenoids. Figure 27 of the present application shows the use of more than $N+1$ signal lines for driving the plurality N of solenoids, in contrast to the requirements of present claim 10. In addition, one of ordinary skill in the art would not be motivated by figure 27 of the present application to couple the plurality N of solenoids only with $N+1$ signal lines for driving the plurality N of solenoids, as required in claim 10. Therefore, applicant respectfully requests that the examiner reconsider and withdraw this rejection.

Claims 11-13 depend from claim 10 and thus include its limitations. Since claim 10 is patently distinguishable from the showing in Fig. 27 of the present application as explained above, claims 11-13 are also patently distinguishable from the showing in figure 27 of the present application. The teachings of Niwa do not cure or rectify the aforesaid deficiency in the showing in figure 27 of the present application. Therefore, applicant respectfully submits that claims 11-13 are patently distinguishable from the combined teachings of figure 27 of the present application and Niwa. Accordingly, it is respectfully requested that the examiner reconsider and withdraw the rejection(s) over the showing of figure 27 of the present application either alone or combined with the teachings of Niwa.

With respect to the rejections of claims 1-2 and 5-7 under 35 U.S.C. § 102(b) or 35 U.S.C. § 103(a) as being unpatentable over Niwa, applicant

respectfully submits that these claims are patently distinguishable from the teachings of Niwa for at least the following reasons.

In the foregoing amendments, claim 1 was amended by including the limitations of claim 2 therein. In the rejection of claim 2, the Official action stated that it would have been obvious to switch the positions of the switch means with that of the solenoid (i.e., arranging the current detector either on the high side or the low side of the power source), as the results of operation and performance would not change. However, this statement in the Official action is incorrect as repeatedly explained in applicant's specification disclosure. See, for example, the discussion in applicant's specification disclosure from page 5, line 18, through page 6, line 17, where it is explained:

In the solenoid driving device shown in Fig. 25 or 27, on the other hand, the current detector is disposed on the low side (or on the GND side) with respect to the solenoid 1 so that the incomplete ground or the complete grounding of the solenoid 1 cannot be detected.

Specifically, the signal line of about 1 to 2 m for connecting the solenoid 1 arranged outside of the controller and the controller (or its connector 3) is exposed at its conductive portion, when led around in the car body connected with the GND, to contact with the car body. Then, the solenoid 1 may be incompletely or completely grounded.

Where the solenoid 1 is incompletely or completely grounded (as referred to the dotted line portion), as shown in Fig. 29, the summed electric current ($i_1 + i_2$) of an electric current i_1 to flow to the GND through the switch SW, the solenoid 1 and the current detector 4 and an electric current i_2 to flow through the switch SW and the solenoid 1 to the GND (or the car body grounded to the GND) flows from the load power source VB to the switch SW.

In short, the summed electric current ($i_1 + i_2$) of the electric current i_1 and the electric current i_2 flows through the switch SW and the solenoid 1. However, the current detector 4, as disposed on the low side with reference to the solenoid 1, can detect the electric current i_1 but not the electric current i_2 .

From the above discussion, it would be understood by those skilled in the art that when the current detector is disposed on the low side (or on the ground side) with respect to the solenoid as proposed by Niwa, it cannot detect incomplete or complete grounding of a solenoid. The arrangement of applicant's claims rectifies this deficiency in the prior art. No reason was proffered in the outstanding Office action and the applicant is unaware of any reason for one of ordinary skill in the art to modify the teachings of Niwa to the arrangements and structures as set forth in applicant's claim 1, especially with respect to the arrangement and location of the presently claimed current detector between said first power source and said solenoid (on the high side or the power source side) with respect to the solenoid that is opposite to the structure proposed by Niwa. For these reasons, applicant respectfully submits that the arrangements set forth in the presently claimed invention would not have been obvious to one of ordinary skill in the art based on the teachings of Niwa. Therefore, applicant respectfully requests that the examiner reconsider and withdraw the rejection of the present claims over the teachings of Niwa.

In the rejection of claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Niwa in view of Suzuki, the Official action stated that Suzuki

teaches a controller for an electromagnetic valve wherein the driving components are housed within a controller section separate from a solenoid section and a terminal portion is used to interface between the two sections. The Official action concluded that it would have been obvious to incorporate a separate controller section and solenoid sections in the teachings of Niwa that are interface with a terminal portion. Applicant respectfully submits that the presently claimed invention is distinguishable from the teachings of Niwa and Suzuki at least for the following reasons.

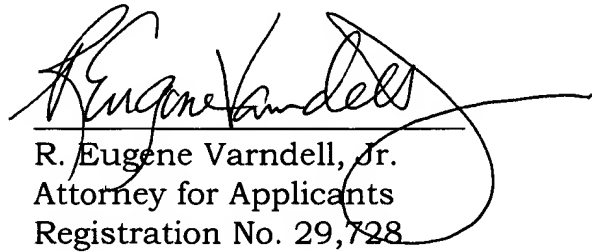
Applicant respectfully submits that one of ordinary skill in the art would not be motivated to separately house the controller section and solenoid sections of Niwa. Figure 3 of Niwa proposes a separate power line for converter 11e, which feeds AC power to the solenoid. In addition, figure 3 of Niwa proposes outputting signal 1 from circuit 14e to a controller terminal (base) 17a of a transistor 17 through a photoisolator 33 for preventing direct current from flowing between the transistor 17 and the circuit 14e. See column 4, lines 38-42, of Niwa. As a result, it would be apparent to those skilled in the art that the teachings of Niwa desire that the controller section and solenoid sections are not separately wired. In addition, it would be apparent to those skilled in the art that the teachings of Niwa are utilizing both AC and DC circuitry within the device shown in figure 3. Irrespective of the teachings of Suzuki, one of ordinary skill in the art cannot be motivated to modify the

structure proposed in Niwa to an arrangement not desired therein or not functional therein, because such a modification would destroy the teachings of Niwa. For these reasons, applicant respectfully submits that one of ordinary skill in the art would not be motivated to separately house the controller section and solenoid sections of Niwa and then couple these sections together through a terminal portion, which is opposite to the requirements set forth in claims 3 and 4. Therefore, applicant respectfully submits that the invention as set forth in claims 3 and 4 cannot be obvious from the teachings of Niwa alone or combined with those of Suzuki within the meaning of 35 U.S.C §103(a). Accordingly, applicant respectfully requests that the examiner reconsider and withdraw this rejection.

In view of the foregoing amendments and remarks, favorable consideration and allowance of claims 1, 3-7, and 10-13, together with allowable claims 8, 9, and 14, are respectfully requested. While it is believed that all the claims in this application are in condition for allowance, should the examiner have any comments or questions, it is respectfully requested that the undersigned be telephoned at the below listed number to resolve any outstanding issues.

In the event this paper is not timely filed, applicant hereby petitions for an appropriate extension of time. The fee therefor, as well as any other fees which become due, may be charged to our deposit account No. 22-0256.

Respectfully submitted,
VARNDELL & VARNDELL, PLLC
(Formerly Varndell Legal Group)



R. Eugene Varndell, Jr.
Attorney for Applicants
Registration No. 29,728

Atty. Case No. VX012339
106-A S. Columbus St.
Alexandria, VA 22314
(703) 683-9730
\\V:\VDOCS\W_DOCS\AUG04\PO-152-2339 RSAF.DOC